ON A SPECIES OF MOTH *(EPICROCIS TEREBRANS)* DESTRUCTIVE TO RED CEDAR AND OTHER TIMBER TREES IN NEW SOUTH WALES.

By A. Sidney Olliff.

Early in March, 1889, the young Red Cedar trees (*Cedrela toona*, Roxb.) in the State Forest Nursery, at Gosford, were found to be suffering from the attack of some insect, which seriously interfered with their growth, and as the evil appeared to be upon the increase, the matter was brought before the notice of the Colonial Secretary's Office, to which Department the Forest Nursery is attached, with a view to obtaining accurate information as to the nature of the pest, and the best means of checking its ravages. For this purpose the Principal Under-Secretary, Mr. Critchett Walker, communicated with Dr. E. P. Ramsay, the Curator of the Australian Museum, forwarding specimens of a moth, and portions of the trees containing a number of larvæ or caterpillars, presumed to be the early stage of the accompanying moths, and the real cause of the injuries. Unfortunately these specimens could not be identified owing to their poor condition, but Dr. Ramsay recommended that the trees should be carefully examined, and all the infected parts cut off and burnt, and subsequently he handed the larvæ to me for investigation, with the request that I should endeavour to breed the moth. This I failed to do although I had more than one consignment of larvæ from the Nursery, owing to the dry condition in which the cedar twigs were received, so it was determined that I should visit Gosford, and if possible obtain a better supply of material. Accordingly on 22nd August I made a careful examination of the plantations, and with the assistance of Mr. J. McCoig, the Overseer of the Nursery, succeeded in obtaining a number of larvæ in various stages of growth. I found that the injury is caused by the larvæ burrowing into the main stems or "leaders" of the trees for the purpose of eating the pith and soft tissues, which has the effect of arresting the natural growth of the tree, and thus seriously affecting its value for forestry purposes. At the time of my visit to Gosford a large number of the infected trees had been freed from the pest by the energy of the Overseer, who had used the pruning-knife with excellent results, but a few of the larvæ were still to be found by careful searching in an outlying plantation at some distance from the Nursery. A number of the "leaders" containing the burrows of these larvæ were cut and afterwards placed in a jar, partly filled with earth and sand which was kept moist to prevent the wood from

shrinking. By this means a number of the moths were reared during October, and they proved to belong to the Phycitidæ, a family of Lepidoptera containing a large number of species, which in their larval state are internal feeders, and nearly related to certain species included in Zeller's genus *Epicrocis*. In general form, and in its habits, the Gosford moth also greatly resembles a species (*Magiria robusta*, Mre.*) from Ceylon, observed by Dr. Thwaites feeding within "branchlets of mahogany," but as it appears to differ in certain points from this species and from *Epicrocis patulalis*, Wlk., the form which it most nearly approaches, I have ventured to characterize it under the name *Epicrocis terebrans*. From the latest account (13th January) it appears that the pest is gradually disappearing from the Nursery. Mr. McCoig reports that it is now very scarce, and that no opportunity of destroying the larvæ is neglected.

Epicrocis, *Zell.*

The species here characterized as *Epicrocis terebrans* is in my opinion congeneric with *E. sublignalis*, Wlk. (*E. strigiferella* Meyr.), and *E. mesembrina*, Meyr., as it agrees in every particular with specimens of those species kindly identified by Mr. E. Meyrick. In one important point, however, none of these species agree with Mr. Meyrick's descriptions† of *Epicrocis* or the allied genera, inasmuch as the hindwings are provided with *nine* (see pl. ii., fig. 3) instead of eight veins, a condition which appears to be unusual in the Phycitidæ. There is no doubt of the accuracy of the observation, as I have made a microscopical examination of the wings of the three species mounted in oil of cloves, a proceeding I venture to think which might be followed by lepidopterists with advantage in cases where the venation is difficult to follow.

Fam. PHYCITIDÆ.

Epicrocis terebrans, *sp. n.*

♂ ♀. Head dull reddish-ochreous; thorax and abdomen greyish-ochreous, the former paler in front. Labial palpi whitish, inclining to fuscous externally, not reaching above upper margin of eye. Antennæ brownish-ochreous, very finely ciliated, basal joint large, thickly clothed with scales. Forewing elongate, moderately broad, dilated, greyish-ochreous, suffused on disc and on inner margin with brownish-fuscous, thickly clothed with white scales near anterior margin and towards apex from basal two-thirds, and dusted with fuscous and dull carmine scales; an

* Moore, Lepidoptera of Ceylon, iii., p. 365, pl. 184, fig. 4 ♂, 4a larva, (1887).

†Proc. Linn. Soc. N.S. Wales, vii., p. 157 (1883), and Trans. Ent. Soc. Lond., 1887, p. 257.

indistinct dark longitudinal fuscous line near costa extending from base to just before apex, an irregular fuscous patch at extremity of cell bordered externally with white ; a second very indistinct fuscous line on disc extending to middle ; vein 1 dull fuscous, veins 2 – 6 at apical fourth streaked with black, the streaks short, reaching the margin, interrupted in their middle ; two inconspicuous dark fuscous spots on costa before apex, and another similar but smaller spot on inner margin before anal angle ; cilia dull carmine, ochreous at base, with a distinct fuscous parting line, interrupted by a row of ochreous whitish points. Hindwing whitish, suffused with fuscous towards apex and at costa ; hind-margin narrowly edged with fuscous ; cilia whitish, inclining to fuscous near anal angle, a dark fuscous parting line near base. Expanse ♂ 28 – 33 mm. ; ♀ 34 – 36 mm.

Gosford, Hawkesbury River, New South Wales ; larvæ feeding in twigs of *Cedrela* and *Casuarina*.

♂ Antennæ feebly dentate ; ♀ simple ; in form similar to those of *Epicrocis sublignalis*, Wlk.

This species appears to be nearly allied to *Epicrocis patulalis*, Wlk. (*E. rufitinctella*, Meyr.), but the markings are even less definite than in that form, judging from the detailed description published by Mr. Meyrick (Proc. Linn. Soc. N.S. Wales, iii., p. 203, 1879). It may be recognised by the presence of the dark patch at the end of the discoidal cell, relieved outwardly by a patch of white scales, by the characteristic streaking at the apical extremity of the wings, and by its generally larger size.

The adult larva elongate, rather robust, with sixteen legs, and nine pairs of lateral stigmata, of which the first is pro-thoracic. Head and dorsal surface of 1st thoracic segment black ; 2nd and 3rd thoracic segments and body pale sea-green, inclining to purplish in certain lights especially at the sides, an ill-defined salmon coloured streak on each side in the region of the stigmata extending from the 4th to 11th segment inclusive, this marking less conspicuous on thoracic segments ; with two dorsal and three lateral rows of rather large black tubercles, each giving rise to a long outstanding seta, the dorsal rows are somewhat irregular owing to the presence on the segmental folds of similar tubercles which are a little nearer the sides, of these rows of tubercles that just above the legs is the least conspicuous ; the 1st thoracic segment is sea-green at the sides, and is provided with two lateral tubercles being a continuation of the lower lateral rows ; 12th segment rounded, without tubercles ; stigmata or spiracles ochreous, placed beneath the 1st, and above the 2nd and 3rd rows of lateral tubercles ; thoracic legs pitchy, abdominal legs sea-green, inclining to fuscous. Length 16 – 20 mm.

Up to the time when the larva is about two-thirds grown it is of a more sombre colour than the above description would imply,

being of an obscure greyish-brown tinged with green, and having the head dark brown, the tubercles, both dorsal and lateral, brownish-black, and the last abdominal segment (that bearing the anal claspers) ochreous. In form it is more attenuated and less robust. My observations go to show that throughout the life of the animal its tendency is to increase in width, the adult larva being proportionately of greater girth, and capable of less extension than the young. In its fully grown state, particularly when about to change to the pupa, it bears a striking resemblance to the larvæ of certain Saw-flies or Tenthredinidæ, many of which, like the moth under consideration, are internal feeders, but this likeness is only superficial, as the number of the feet, and the position of the spiracles, clearly indicate its lepidopterous nature; and I may add its general structure accords with what we know of the larvæ of the family Phycitidæ.

The pupa or chrysalis is reddish-brown, and is enclosed in an elongate tough cocoon, composed of coarse grey silk. Usually the cocoon is placed at the entrance to the burrow in which the larva has lived, but sometimes it is found attached to the stem of the food-plant. In no case did I observe them upon the leaves, although in a few instances I saw three or four cocoons spun together in a mass and attached to a twig; in every instance, however, they were found near the burrows from which the larvæ had made their escape.

EXPLANATION OF PLATE II.

Fig. 1. *Epicrocis terebrans*, Olliff ♂.
„ 2. Outline of same showing natural size.
„ 3. Venation of same. Forewing 11 veins; hindwing 9 veins.
„ 4. Larva of same about two-thirds grown.
„ 5. Larva of same about to pupate.
„ 6. Pupa of same, and portion of cocoon.
„ 7, 8, and 9. Stems or "leaders" of Red Cedar showing borings of larvæ, cocoons, and pupa *in situ*.

NOTE ON *PIEZORHYNCHUS LEUCOTIS*, GOULD, *PYCNOPTILUS FLOCCOSUS*, GOULD, AND OTHERS RARE TO NEW SOUTH WALES.

By E. P. Ramsay.

Piezorhynchus leucotis has hitherto been recorded only from Queensland and northwards therefrom, but I have recently had an opportunity of examining a fresh specimen shot in a dense part of a damp scrubby gully in one of the gorges of the Blue